

**Improving Teaching and Learning in Technical Colleges through Information
and Communication Technology Towards the
Realization of Nigeria's Vision 2020**

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Abstract

Nigeria's Vision 2020 is an economic plan intended to make Nigeria to be among the 20 largest economies by the year 2020. The economic development of a nation depends to a large extent on the ability of its citizens to be able to access and effectively utilize information. Therefore, for Nigeria to be a major player in the global market there is need for the country to fully embrace Information and Communication Technology (ICT) for teaching and learning. This paper explains the role of ICT in improving teaching and learning. Obstacles militating against the use of ICT in schools and suggestions on the way forward were also highlighted.

Introduction

Nigeria's economic potential is well recognized in Africa. It is one of the biggest economies in the West African sub region. Given the country's considerable resource endowment and coastal location, there is potential for strong growth. However, Nigeria has realized very little of this potential. Precious efforts at planning and visioning necessary for the realization of Nigeria's potential were not sustained. According to Yar'adua (2008), Nigeria's attempt at strategic planning and long term visioning process had not yielded substantial benefit over the years. For instance, the vision 2010 which was prepared in 1996/1997 by the then Military Administration was not implemented. The present Civilian Administration has come up with a long term development plan which is commonly term "Nigeria's Vision 2020". The objectives of the vision is that by the year 2020, Nigeria will be one of the 20 largest economies in the world which will enable the country to consolidate it's leadership role in Africa and establish itself as a significant player in the global economic arena (National Council on Nigeria's Vision 2020, 2008). Therefore, Nigeria's vision 2020 is a perspective plan; an economic business plan intended to make Nigeria a fully developed economy by the year 2020.

From the foregoing, it implies that in 11 years time, Nigeria will move from it's 41st position in the world economy rating to 20th position. However, reports from literature shows that this objective may be very difficult to achieve. For instance, Ogunloye (2008) lamented that it is difficult for Nigeria to go from number 41 to 20 in the world economic rating. He noted that the vision which is about economic growth can not be achieved without productivity. For the vision to be a reality, he added, the economy must be competitive on global skills. This means that all industries in Nigeria should be able to produce what can compete favourably with other countries. For Nigerian industries to be able to achieve this goal depends on the availability of skillful

vocational workers who are largely products of technical colleges. This implies that technical college product must be well trained towards achieving Nigeria's vision 2020.

One of the goals of technical and vocational education according to the National Policy on Education (2004) is to provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development. This implies that the type of education provided at the technical college level is most concerned with preparing human resources for human industries. In order to achieve this goal and consequently the objectives of Nigeria's vision 2020, an enabling and sustainable environment necessary for imparting and acquiring of knowledge and skills through teaching and learning must be provided. Learning is commonly referred to as the process of acquiring knowledge and skills while teaching is the science and art of assisting a person to learn (Ogwo and Oranu, 2006). An effective teaching/learning process must stimulate intellectual curiosity and offer a sense of enjoyment that will move the students from the passive role of recipients of information to the active role of builders of knowledge. However, engaging the learner in this process can be the most challenging task for teachers. The capacity of Information and Communication Technology (ICT) to store, process and deliver information makes them effective instructional aids that could be used to engage students in a learning process that will lead to the acquisition of the industrial skills necessary for Nigeria's economic growth. Hence, the need for improving teaching and learning in technical colleges through Information and Communication Technology.

Information and Communication Technology (ICT)

Information and Communication Technology (ICT) according to Toomey (2001) generally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g computer and other devices); software applications and connectivity (e.g access to the internet, local networking infrastructure, video conferencing). Aleburo and Olusanya (2007) conceptualized ICT as the combination of items of equipment (hardware) and computer programmes (software) that allow us to access, retrieve, store, organize, manipulate and present information by electronic means. Information and Communication Technology (ICT) is a diverse set of technological tools and resources used to create and manipulate information. It also provides a broad perspective on the nature of technologies, how to use and apply these technologies in order to impact on self and society.

Albarta Learning (2000) noted that technology is about the ways things are done; the process, tools and techniques that alter human activity. In this regard, it was therefore added that Information and Communication Technology (ICT) is about the new ways in which we can communicate, inquire, make decisions and solve problems. It is the processes, tools and techniques for:

- gathering and identifying information
- classifying and organizing
- summarizing and synthesizing

- analyzing and evaluating
- speculating and predicting

Education has turned into a huge global market with aggressive players in place for countries willing to invest in e-learning, hardware, software and networks. This has resulted into many countries around the world investing in ICT to improve and update the education they provide their younger generation. Rafi, David and Anat (2008) emphasized that ICT powers our access to information, enables new forms of communication and serves many on-line services in the spheres of commerce, culture, entertainment and education. Therefore, Nigeria's vision can be rapidly enhanced through innovations in competitive global market which is enabled by the capacity of ICT to create, store, process and deliver information.

Role of ICT in Teaching and Learning towards the Realization of Vision 2020

Learning is one component of the educational process, and quality learning cannot be attained without good teaching. In the learning process, teachers are expected to help students to acquire various skills – problem solving, creativity, team work, synthesis and above all, the skills of how to learn new knowledge and apply that knowledge to new situation. Therefore, for effective learning to take place, learning has to be active, learning has to be meaningful and authentic and the learning environment should be challenging but not stressful. ICT has the capacity to make this kind of situation a reality.

The research about ICT's capacity to improve learning and teaching shows that it can play a key role in the complete task of better engaging young people in the learning process. Studies have shown that the use of ICT in teaching and learning has positive effects. For instance, Clarkson, Dunbar and Toomey (1999) found out that teaching and learning with the help of ICT helps young people develop skills and abilities such as literacy and numeric, development of higher order thinking skills, team work capability and problem solving skills that are not only important for life in the information age, but also for lifelong learning. Tele-Learning Network Incorporated (1998) identified seven trends that occur in schools when ICT is introduced:

1. There are higher levels of control by learners over their learning;
2. Learning situations become more realistic and authentic;
3. Students interest and motivation are very significantly boosted;
4. Successful online classroom combine ICT with an appropriate, usually constructivist pedagogy;
5. Online learning communities challenge locally established curriculum;
6. The education of educators (teachers) is extended to include just in time learning and collaborative learning; and
7. Educators use online technology as a driving element of further educational reform.

Similarly, Toomey (2001) suggested that when ICT is combined with good teaching and learning practices, the following are likely to be the result;

- It will lead to the development of advance skills of technological competence, problem solving, critical thinking and team work; and

- It will make more learning materials available and provides more sources of learning.

ICT can and should play a variety of roles in the school system. Pedro, Enrique, Ernesto and Lucio (2004) reported that some of the more important roles of ICT inside a school include pedagogical, cultural, social, professional and administrative. Pedro et al (2004) stated that an important role of ICT inside school is that of providing a new framework that can foster a revision and an improvement of teaching and learning practices. It was noted that the pedagogical use of ICT in the classroom include collaborative, project – based and self paced learning. To improve teaching and learning, teachers and students need to take advantage of the growing availability of educational resources as software packages and web pages. Teachers will need curricula – related content and clear strategies and examples to effectively use these materials in the classroom. They will find that students can become highly motivated towards learning (and even towards regularly attending school) if technology makes up part of their classroom experience. Teachers can fruitfully use this positive attitude to explore new learning strategies in which students can be more actively involved in learning as opposed to being simply passive information receivers.

It is important to note that it is not the presence of ICTs only that will stimulate significant changes in the teaching and learning process. Without teacher's involvement, most students may not take advantage of all the available potentials on their own. Teachers need to become active participants for effective ICT educational use such as providing guidance, help and usage rules for the students. Teachers need to guide the students toward the achievement of identified learning objectives.

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2002) stated that there are three general approaches to the instructional use of ICT (computers and the internet) for teaching and learning, they are:

- (a) Learning about computers and the internet, in which technological literacy is the end goal;
- (b) Learning with computers and the internet, in which the technology facilitates learning across the curriculum; and
- (c) Learning through computers and the internet, integrating technological skills development with curriculum applications.

Learning about computers and the internet focuses on developing technological literacy. It typical includes:

- Fundamentals; basic terms, concept and operation of computers.
- Use of the keyboard and mouse.
- Use of productivity tools such as word processing, spreadsheets, and data base and graphics programs.
- Use of research and collaboration tools such as search engines and email.
- Basic skills in using programming and authoring applications such as logo or hyper studio.
- Developing an awareness of the social impact of technological change.

Learning with the technology means focusing on how the technology can be the means to learning the curriculum. It includes:

- Presentation, demonstration, and the manipulation of data using productivity tools.
- Use of curriculum – specific applications type such as educational games, drill and practice, simulations, tutorials, virtual laboratories, visualization and graphical representations of abstract concepts, musical composition, and expert systems.
- Use of information and resources on CD – ROM or online such as encyclopedia, interactive maps and atlases, electronics journals and other references.

Technological literacy is required for learning with technologies to be possible, implying a two-step process in which students learn about the technologies before they can actually use them to learn. Learning through computers and the internet combines learning about them with learning with them. It involves learning the technological skills by the learner as he or she engages in a curriculum related activity.

It is noted from the above that if ICT is adequately used for teaching and learning, it will help prepare students for the world of work. Similarly, one of the most important reasons for using ICTs in the classroom is to better prepare the current generation of students for a workplace where ICTs, particularly computers, the internet and related technologies, are becoming more and more ubiquitous. Technological literacy, or the ability to use ICTs effectively and efficiently is thus seen as representing a competitive edge in an increasingly globalizing job market.

ICT can be an enabling tool for improving teaching and learning in technical colleges because it enables teachers and students to teach and learn in new improved ways respectively. However, despite the fact that ICT has brought new possibilities into education sector, they have also placed more demands on teachers. Teachers now have to learn how to cope with computers in their classrooms, how to compete with students in accessing the enormous information, particularly via the internet and how to use the hardware and software to enhance the teaching/learning process. The extensive use of ICT in Nigerian schools is still a dream despite its importance. This is because most of our schools don't have ICT facilities (computers and internet facilities). For instance, Aduwa – Ogiegbaen and Iyamu (2005) identified high cost of computer hardware and software; weak infrastructure; lack of human skills and knowledge; high cost of subscribing to internet and lack of relevant software appropriate and culturally suitable for Nigeria as major stumbling blocks to the adoption of ICT in Nigerian secondary education. Lack of these facilities will result into inadequate training of teachers and students in the use of ICT in teaching and learning process. Consequently, Nigeria's vision of being one of the 20 largest economies in the world by the year 2020 may not be a reality. It is therefore important to fully embrace the use of ICT in teaching and learning towards the achievement of identified goals.

Conclusion

Reports in literature have shown that Information and Communication Technology (ICT) can play an important role in enhancing teaching and learning. Since education provided at the technical college level has been identified as one of the most potent

instrument for achieving economic emancipation, the economic growth of Nigeria as a nation can be achieved through the use of ICT in teaching and learning in technical colleges. It was however, noted that ICT have not provided any large – scale break through in teaching and learning improvement in Nigerian schools, hence the need to invest more in it.

Recommendations

- ICT should be included in Technical College curriculum as teaching and learning resources along with examples of how to use them in classrooms.
- Nigerian government at all levels should initiate and support programmes that leads to the increase in the use of ICT in schools.
- Teachers should be trained and retrained continuously on how to use ICT in improving teaching and learning.
- Parents should endeavour to procure computers for their children as this will boost their interest in ICT and improve their learning capabilities.
- Government and non-governmental organizations should joint hands to ensure adequate provision of ICT facilities in Nigerian schools.

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